PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of	Docket No: Q88367
Jun YAMAMOTO	
Appln. No.: 10/539,020	Group Art Unit: 1732
Confirmation No.: 7381	Examiner: Kenneth VADEN
Filed: June 15, 2005	

For: PROCESS FOR PRODUCING TITANIUM-CONTAINING SILICON OXIDE CATALYST

REPLY BRIEF PURSUANT TO 37 C.F.R. § 41.41

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In accordance with the provisions of 37 C.F.R. § 41.41, Appellant respectfully submits this Reply Brief in response to the Examiner's Answer dated January 18, 2011. Entry of this Reply Brief is respectfully requested.

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STATUS OF CLAIMS

Claims 1-10 stand rejected and are the subject of this appeal.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-10 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Yamamoto et al. (US 6,323,147).

Claim 9 has been rejected for obviousness-type double patenting as being unpatentable over Claim 1 of U.S. Patent No. 6,323,147.

ARGUMENT

I. Yamamoto et al. does not teach or suggest the third step of present Claim 1

At page 7 of the Examiner's Answer, the Examiner maintains his position that Yamamoto et al. suggests step three of Claim 1, in which the template extraction solvent remaining in the solid after the removal of the template is substituted with a solvent substantially inert to the silylating agent used in the following silylation step (fourth step).

Specifically, the Examiner states that in col. 4, lines 40-45, Yamamoto et al. teaches that after mixing a catalyst with solvent, a liquid portion is separated by filtration, decantation and the like, and teaches using a solvent for washing as well as that "termination of washing can be known by analyzing the liquid portion." Thus, per the Examiner, washing using a solvent after extraction but before silylation is suggested.

However, Yamamoto et al. teaches that the catalyst is obtained by extracting the catalyst layer with a solvent for washing (col. 4, lines 42-44). The disclosure at col. 4, lines 1-57 of Yamamoto et al. is related to the second step in which a catalyst is obtained by extracting the obtained solid in a solvent to remove the template. Further, Yamamoto et al. teaches that the resulting solid after extraction may be dried (col. 4, line 58).

Further, Yamamoto et al. teaches, in Example 1 at col. 7, lines 40-50, that the filtered white solid obtained after removal of the templates by extraction with a mixed solution of hydrochloric acid/ethanol was transferred to a tubular furnace and heated at 150 °C for five hours under nitrogen flow; then this substance, hexamethyldisilazane and toluene were mixed, and the mixture was heated for 1 hour under reflux with stirring; then liquid was removed by filtration

from the mixture; and it was washed with toluene (100 g), and dried under reduced pressure to obtain a catalyst.

That is, although Yamamoto et al. teaches that the solvent used for washing is toluene, the toluene washing is conducted after silylating the catalyst which corresponds to the fourth step of present Claim 1.

Therefore, the presently claimed solvent substitution procedure (third step) is not taught by Yamamoto et al.

II. The claimed invention exhibits unexpectedly superior results over Yamamoto et al.

At pages 10 and 11 of the Appeal Brief filed November 1, 2010, Appellant explained that a comparison between Example 1 and Comparative Example 1 of the specification shows that there was improvement in the reaction result when the treatment subsequent to extraction but prior to silylation was solvent substitution with toluene (Example 1) versus drying with hot nitrogen (Comparative Example 1, which is representative of Yamamoto et al.). See, Table 1 at page 21 of the specification.

Specifically, as shown in Table 1, the obtained catalyst in Example 1 after silylation showed unexpected superior reactivity when used to produce propylene oxide (PO) from propylene (C3') and cumene hydroperoxide.

More specifically, in the process in accordance with the claims on appeal (Example 1), the selectivity of PO/C3' (propylene oxide/ propylene) is 99.1%. The catalyst treated under a nitrogen atmosphere had a selectivity of 98.7% in Comparative Example 1, which is

representative of Yamamoto et al. PO is reportedly produced in an amount of 3 million tons or so each year worldwide, and at least 0.3 million tons may be produced at one PO production site. Thus, 0.4% of improvement equates to 12,000 tons worldwide or 1,200 tons at one large production site. Such superior results contribute to save resources and are unexpected from the teaching of Yamamoto et al.

That is, the titanium-containing silicon oxide catalyst obtained in accordance with the claimed invention exhibits unexpectedly high reactivity compared to the process taught by Yamamoto et al.

In response, at page 8 of the Examiner's Answer, the Examiner states that there is no evidence of record that PO is produced on such large scale as argued such that the difference between 99.1% and 98.7% is significant and that the evidence shown in Table 1 of the specification is not commensurate in scope with the claim.

Appellant respectfully disagrees.

A comparison between the claimed invention with the closest prior art is effective to rebut a *prima facie* case of obviousness. See, MPEP 716.02(e).

In the present case, Comparative Example 1 in the specification is representative of Yamamoto et al. and a comparison between Example 1 and Comparative Example 1 shows that the presently claimed invention exhibits unexpectedly superior results over Yamamoto et al.

In view of the above, Appellant respectfully requests reversal of the §103(a) rejection of Clams 1-10 based on Yamamoto et al.

III. Claim 9 is not obvious over Claim 1 of U.S. Patent No. 6,323,147.

The obviousness-type double patenting rejection of Claim 9 based on Claim 1 of U.S. Patent No. 6,323,147 (Yamamoto et al.) should be reversed because Claim 9 is not obvious over Claim 1 of the '147 Patent.

Claim 9 relates to a titanium-containing silicon oxide catalyst obtained by the process according to claim 1.

Claim 9 is not obvious over Claim 1 of the '147 Patent, at least for the reason that the third step of present Claim 1 is not taught or suggested by Claim 1 of the '147 Patent. As discussed above, the titanium-containing silicon oxide catalyst obtained in accordance with the process recited in the claims on appeal exhibits unexpectedly higher reactivity than the catalyst of Yamamoto et al.

CONCLUSION

For the above reasons as well as the reasons set forth in Appeal Brief, Appellant respectfully requests that the Board reverse the Examiner's rejections of all claims on Appeal.

An early and favorable decision on the merits of this Appeal is respectfully requested.

Respectfully submitted,

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